

VOLUME

18

1970·CONTENTS

ANIMAL BEHAVIOUR

EDITORS

D. J. McFARLAND AND J. HIRSCH
OXFORD CHAMPAIGN

ASSISTANT EDITOR

E. M. BANKS
URBANA

LONDON
BAILLIÈRE, TINDALL & CASSELL

Original

ADER, F

ALBERT

ALCOCK

ALCOCK

ALCOCK

ANDERS

ARANDA

ATKINS

BANKS,

BARTEL

BEALE,

BEER, C

BEER, C

BEER, C

BERMAN

BIRCH,

BLAKE,

BLUM, S

BOELKIN

BOICE, I

BONGIO

BRAIN,

BRIAN,

BROWN,

BUDGEL

BUTLER

CAPPER,

CARTER

CHEN, V

CHENG,

CHERNE

CICALA,

COLE, L

COLE, L

COLE, L

COLE, L

COLE, L

COLE, L

COLE, L

COLE, L

COLE, L

COLE, L

COLE, L

CONTENTS OF VOLUME 18

Original Contributions

ADER, R. & GROTA, L. J. Rhythmicity in the Maternal Behaviour of <i>Rattus norvegicus</i>	144
ALBERT, IRA B. <i>see</i> CICALA, G. A.	
ALCOCK, J. Punishment Levels and the Response of Blacked-Capped Chickadees (<i>Parus atricapillus</i>) to Three Kinds of Artificial Seeds	592
ALCOCK, J. Punishment Levels and the Response of White-Throated Sparrows (<i>Zonotrichia albicollis</i>) to Three Kinds of Artificial Models and Mimics	733
ANDERSON, V. M. <i>see</i> KLEEREKOPER, H.	
ARANDA, L. C. <i>see</i> CHEN, W. Y.	
ATKINSON, SUE <i>see</i> HINDE, R. A.	
BANKS, E. M. <i>see</i> QUADAGNO, D. M.	
BARTELL, R. J. <i>see</i> SHOREY, H. H.	
BEALE, I. L. <i>see</i> CORBALLIS, M. C.	
BEER, C. G. On the Responses of Laughing Gull Chicks (<i>Larus atricilla</i>) to the Calls of Adults. I. Recognition of the Voices of the Parents	652
BEER, C. G. On the Responses of Laughing Gull Chicks (<i>Larus atricilla</i>) to the Calls of Adults. II. Age Changes and Responses to Different Types of Call	661
BERMANT, G. <i>see</i> CHERNEY, E. F.	
BIRCH, M. Pre-Courtship Use of Abdominal Brushes by the Nocturnal Moth, <i>Phlogophora meticulosa</i> (L.) (Lepidoptera: Noctuidae)	310
BLAKE, G. M. An Incomplete Randomized Block Design, Illustrated by a Study of Humidity Discrimination in <i>Athrenus verbasci</i> (L.) (Col., Dermestidae)	96
BLUM, S. L. <i>see</i> THIESSEN, D. D.	
BOELKINS, R. C. <i>see</i> WILSON, A. P.	
BOICE, R. Competitive Feeding Behaviours in Captive <i>Terrapene c. carolina</i>	703
BONGIORNO, S. F. Nest-Site Selection by Adult Laughing Gulls (<i>Larus atricilla</i>)	434
BRAIN, CAROLYN L. & GRIFFIN, G. A. The Influences of the Sex of Littermates on Body Weight and Behaviour in Rat Pups	512
BRIAN, M. V. Communication Between Queens and Larvae in the Ant <i>Myrmica</i>	467
BROWN, J. L. Cooperative Breeding and Altruistic Behaviour in the Mexican Jay, <i>Aphelocoma ultramarina</i>	366
BUDGELL, P. Modulation of Drinking by Ambient Temperature Changes	753
BUTLER, C. G., FLETCHER, D. J. C. & WALTER, D. Hive Entrance Finding by Honeybee (<i>Apis mellifera</i>) Foragers	78
CAPPER, S. A. <i>see</i> GALLUP, G. G., JR.	
CARTER, CAROL SUE & MARR, J. N. Olfactory Imprinting and Age Variables in the Guinea-Pig, <i>Cavia porcellus</i>	238
CHEN, W. Y., ARANDA, L. C. & LUCO, J. V. Learning and Long- and Short-Term Memory in Cockroaches	725
CHENG, R. <i>see</i> VINCE, MARGARET A.	
CHERNEY, E. F. & BERMANT, G. The Role of Stimulus Female Novelty in the Rearousal of Copulation in Male Laboratory Rats (<i>Rattus norvegicus</i>)	567
CICALA, G. A., ALBERT, IRA B. & ULMER, F. A., JR. Sleep and Other Behaviours of the Red Kangaroo (<i>Megaleia rufa</i>)	787
COLE, L. R. Observations on the Finding of Mates by Male <i>Phaeogenes invisor</i> and <i>Apanteles medicaginis</i> (Hymenoptera: Ichneumonidae)	184

ANIMAL BEHAVIOUR, 18

CORBALLIS, M. C. & BEALE, I. L. Monocular Discrimination of Mirror-Image Obliques by Pigeons: Evidence for Lateralized Stimulus Control	563
CRAWFORD, F. T. <i>see</i> PRESTRUDE, A. M.	
CROOK, J. H. Social Organization and the Environment: Aspects of Contemporary Social Ethology ..	197
DAVIS, G. J. & LUSSENHOP, J. F. Roosting of Starlings (<i>Sturnus vulgaris</i>): A Function of Light and Time ..	362
DAVY, F. B. <i>see</i> KLEEREKOPER, H.	
DENENBERG, V. H. <i>see</i> ROSENBERG, K. M.	
DEWSBURY, D. A. Copulatory Behaviour of Rice Rats (<i>Oryzomys palustris</i>)	266
DICKINSON, A. <i>see</i> OATLEY, K.	
DUNCAN, I. J. H., HORNE, A. R., HUGHES, B. O. & WOOD-GUSH, D. G. M. The Pattern of Food Intake in Female Brown Leghorn Fowls as Recorded in a Skinner Box	245
EMLÉN, S. T. The Influence of Magnetic Information on the Orientation of the Indigo Bunting, <i>Passerina cyanea</i> ..	215
EVANS, S. M. Some Factors Affecting the Flock Behaviour of Red Avadavats (<i>Amandava amandava</i>) with Particular Reference to Clumping	762
FERGUSON, G. W. Mating Behaviour of the Side-Blotched Lizards of the Genus <i>Uta</i> (Sauria: Iguanidae) ..	65
FISHelson, L. Behaviour and Ecology of a Population of <i>Abudefduf saxatilis</i> (Pomacentridae, Teleostei) at Eilat (Red Sea)	225
FISHER, E. W. <i>see</i> SELMAN, I. E.	
FISHER, K. C. & SMITH, D. A. Application of an Automatic Integrating System to the Recording of Spontaneous Locomotor Activity in Small Mammals	678
FLETCHER, D. J. C. <i>see</i> BUTLER, C. G.	
GALLUP, G. G., JR & CAPPER, S. A. Preference for Mirror-Image Stimulation in Finches (<i>Passer domesticus domesticus</i>) and Parakeets (<i>Melopsittacus undulatus</i>)	621
GIBSON, R. N. The Tidal Rhythm of Activity of <i>Coryphoblennius galerita</i> (L.) (Teleostei, Blenniidae)	539
GILBERT, A. B. <i>see</i> WOOD-GUSH, D. G. M.	
GRANT, P. R. Experimental Studies of Competitive Interaction in a Two-Species System. II. The Behaviour of <i>Microtus</i> , <i>Peromyscus</i> and <i>Clethrionomys</i> Species	411
GRAUE, L. C. Orientation and Distance in Pigeon Homing (<i>Columbia livia</i>)	36
GRAVES, H. B. <i>see</i> SCHULMAN, A. H.	
GRIFFIN, G. A. <i>see</i> BRAIN, CAROLYN L.	
GROTA, L. J. <i>see</i> ADER, R.	
GUMMA, M. R. & SOUTH, F. E. Hypothermia and Behavioural Thermoregulation by the Hamster (<i>Mesocricetus auratus</i>)	504
GWADZ, R. W. Monofactorial Inheritance of Early Sexual Receptivity in the Mosquito, <i>Aedes atropalpus</i> ..	358
HALE, E. B. <i>see</i> SCHULMAN, A. H.	
HAMILTON, J. B. <i>see</i> WALTER, R. O.	
HANGARTNER, W., REICHSON, J. M. & WILSON, E. O. Orientation to Nest Material by the Ant, <i>Pogonomyrmex badius</i> (Latreille)	331
HARTNOLL, R. G. Swimming in the Dromid Crab (<i>Homola barbata</i>)	588
HENSHAW, J. Consequences of Travel in the Rutting of Reindeer and Caribou (<i>Rangifer tarandus</i>)	256
HINDE, R. A. & ATKINSON, SUE. Assessing the Roles of Social Partners in Maintaining Mutual Proximity, as Exemplified by Mother-Infant Relations in Rhesus Monkeys	169
HORNE, A. E. <i>see</i> DUNCAN, I. J.	
HUGHES, B. O. <i>see</i> DUNCAN, I. J.	

CONTENTS

563	HUTCHINSON, J. B. Differential Effects of Testosterone and Oestradiol on Male Courtship in Barbary Doves (<i>Sireptopelia risoria</i>)	41
197	JENSEN, T. A. Female Response to Filmed Displays of <i>Anolis nebulosus</i> (Sauria, Iguanidae)	640
362	JOLLEY, A. Effects of Food Deprivation and Consummatory Activity on the Heart Rate of the Rat	92
	KALKHOVEN, J. TH. R. <i>see</i> VAN ABELEN, J. H. F.	
	KEIFER, R. R. Studies of Stereotypy Function in the Canary (<i>Serinus canarius</i>)	353
266	KIVIVUORI, LIISA <i>see</i> LAGERSPETZ, KARI Y. H.	
245	KLEEREKOPER, H., TIMMS, A. M., WESTLAKE, G. F., DAVY, F. B., MALAR, T. & ANDERSON, V. M. An Analysis of Locomotor Behaviour of Goldfish (<i>Carrassius auratus</i>)	317
215	KOPOWITZ, H. Feeding Behaviour and the Role of the Brain in the Polyclad Flatworm, <i>Planocera gilchristi</i>	31
762	LAGERSPETZ, KARI Y. H. & KIVIVUORI, LIISA. The Rate and Retention of the Habituation of the Shadow Reflex in <i>Balanus improvisus</i> (Cirripedia)	616
65	LERESCH, R. E. & SLADEN, W. J. L. Establishment of Pair and Breeding Site Bonds by Young Known-Age Adelie Penguins (<i>Pygoscelis adeliae</i>)	517
225	LINDSEY, G. A. <i>see</i> THIESSEN, D. D.	
	LORE, R. <i>see</i> SCHIFFMAN, H. R.	
	LUCCO, J. V. <i>see</i> CHEN, W. Y.	
678	LUSSENHOP, J. F. <i>see</i> DAVIS, G. J.	
	MACKINTOSH, J. H. Territory Formation by Laboratory Mice	177
621	MALAR, T. <i>see</i> KLEEREKOPER, H.	
539	MARR, J. N. <i>see</i> CARTER, CAROL SUE	
	MC EWAN, A. D. <i>see</i> SELMAN, I. E.	
411	MICHAEL, R. P. & ZUMPE, D. Aggression and Gonadal Hormones in Captive Rhesus Monkeys (<i>Macaca mulatta</i>)	1
36	MICHAEL, R. P. <i>see</i> ZUMPE, D.	
	MISELIS, R. & WALCOTT, C. Locomotor Activity Rhythms in Homing Pigeons (<i>Columbia livia</i>)	544
	MOLLER, P. 'Communication' in Weakly Electric Fish, <i>Gnathonemus niger</i> (Mormyridae). I. Variation of Electric Organ Discharge (EOD) Frequency Elicited by Controlled Electric Stimuli	768
	MROSOVSKY, N. The Influence of the Sun's Position and Elevated Cues on the Orientation of Hatchling Sea Turtles	648
	MUUL, I. Intra- and Inter-Familial Behaviour of <i>Glaucomys volans</i> (Rodentia) Following Parturition	20
	NEEB, R. <i>see</i> SCHIFFMAN, H. R.	
504	NÚÑEZ, J. A. The Relationship Between Sugar Flow and Foraging and Recruiting Behaviour of Honey Bees (<i>Apis mellifera</i> L.)	527
358	OATLEY, K. & DICKINSON, A. Air Drinking and the Measurement of Thirst	259
	OPPENHEIM, R. W. Some Aspects of Embryonic Behaviour in the Duck (<i>Anas platyrhynchos</i>)	335
331	OPPENHEIMER, J. R. Mouthbreeding in Fishes	493
588	OWENS, C. D. <i>see</i> TABER, S. III.	
256	PASSAFIUME, J. <i>see</i> SCHIFFMAN, H., R.	
	PETERS, P. Orb Web Construction: Interaction of Spider (<i>Araneus diadematus</i> C.) and Thread Configuration	478
169	POPPER, A. N. Auditory Capacities of the Mexican Blind Cave Fish (<i>Astyanax jordani</i>) and its Eyed Ancestor (<i>Astyanax mexicanus</i>)	552
	PRESCOTT, R. G. W. Some Behavioural Effects of Variables which Influence the 'General Level of Activity' of Rats	791
	PRESTRUDE, A. M. & CRAWFORD, F. T. Tonic Immobility in the Lizard, <i>Iguana iguana</i>	391

ANIMAL BEHAVIOUR, 18

PRICE, E. Differential Reactivity of Wild and Semi-Domestic Deermice (<i>Peromyscus maniculatus</i>)	747
PRITCHATT, D. Further Studies on the Avoidance Behaviour of <i>Periplaneta americana</i> to Electric Shock ..	485
QUADAGNO, D. M. & BANKS, E. M. The Effects of Reciprocal Cross-Fostering on the Behaviour of Two Species of Rodents, <i>Mus musculus</i> and <i>Baiomys taylori</i>	379
RAY, A. J., JR. Instrumental Avoidance Learning by the Tiger Salamander <i>Ambystoma tigrinum</i>	73
RECHSON, J. M. <i>see</i> HANGARTNER, W.	
RICHARDSON, A. J. The Role of the Crop in the Feeding Behaviour of the Domestic Chick	633
ROSENBERG, K. M., DENENBERG, V. H. & ZARROW, M. X. Mice (<i>Mus musculus</i>) Reared with Rat Aunts: The Role of the Rat-Mouse Contact in Mediating Behavioural and Physiological Changes in the Mouse ..	138
RUBEL, E. W. Effects of Early Experience on Fear Behaviour of <i>Coturnix coturnix</i>	427
RUSSELL, P. A. Effects of Maternal Deprivation Treatments in the Rat	700
SADLEIR, R. M. F. S. The Establishment of a Dominance Rank Order in Male <i>Peromyscus maniculatus</i> and its Stability with Time	55
SCHLEIDT, W. M. Precocial Sexual Behaviour in Turkeys (<i>Meleagris gallopavo</i> L.)	760
SCHIFFMAN, H. R., LORE, R., PASSAFIUME, J. & NEEB, R. Role of Vibrissae for Depth Perception in the Rat (<i>Rattus norvegicus</i>)	290
SCHULMAN, A. H. Precocial Sexual Behaviour in Imprinted Male Turkeys (<i>Meleagris gallopavo</i>)	758
SCHULMAN, A. H., HALE, E. B. & GRAVES, H. B. Visual Stimulus Characteristics for Initial Approach Response in Chicks (<i>Gallus domesticus</i>)	461
SELMAN, I. E., MCEWAN, A. D. & FISHER, E. W. Studies on Natural Suckling in Cattle During the First Eight Hours Post Partum. I. Behavioural Studies (Dam)	276
SELMAN, I. E., MCEWAN, A. D. & FISHER, E. W. Studies on Natural Suckling in Cattle During the First Eight Hours Post Partum. II. Behavioural Studies (Calves)	284
SHIOVITZ, K. A. & THOMPSON, W. L. Geographic Variation in Song Composition of the Indigo Bunting, <i>Passerina cyanea</i>	151
SHOREY, H. H. & BARTELL, R. J. Role of a Volatile Female Sex Pheromone in Stimulating Male Courtship Behaviour in <i>Drosophila melanogaster</i>	159
SIGNORET, J. P. Sexual Behaviour Patterns in Female Domestic Pigs (<i>Sus scrofa</i> L.) Reared in Isolation from Males	165
SLADEN, W. J. L. <i>see</i> LERESCHE, R. E.	
SMART, J. L. Trial-and-Error Behaviour of Inbred and F ₁ Hybrid Mice	445
SMITH, D. A. <i>see</i> FISHER, K. C.	
SMITH, R. J. F. Control of Prespawning Behaviour of Sunfish (<i>Lepomis gibbosus</i> and <i>Lepomis megalotis</i>). II. Environmental Factors	575
SOUTH, F. E. <i>see</i> GUMMA, M. R.	
SPRADBERY, J. P. Host Finding by <i>Rhyssa persuasoria</i> (L.), and Ichneumonid Parasite of Sircid Woodwasps ..	103
SWENSON, L. C. One Versus Two Discrimination by Whiteneked Ravens (<i>Corvus cryptoleucus</i>) with Non-Number Dimensions Varied	454
SWIHART, C. A. & SWIHART, S. L. Colour Selection and Learned Feeding Preferences in the Butterfly, <i>Heliconius charitonius</i> Linn	60
SWIHART, S. L. <i>see</i> SWIHART, C. A.	
TABER, S., III & OWENS, C. D. Colony Founding and Initial Nest Design of Honey Bees, <i>Apis mellifera</i> L. ..	625
THIESSEN, D. D., BLUM, S. L. & LINDZEY, G. A Scent Marking Response Associated with Ventral Sebaceous Gland of the Mongolian Gerbil (<i>Meriones unguiculatus</i>)	26
THOMPSON, W. L. <i>see</i> SHIOVITZ, K. A.	
TIMMS, A. M. <i>see</i> KLEEREKOPER, H.	

CONTENTS

747	ULMER, F. A., JR. <i>see</i> CICALA, G. A.	
485	VAN ABELEN, J. H. F. & KALKHOVEN, J. TH. R. Behavioural Ontogeny of the Nijmegen Waltzer, A Neurological Mutant in the Mouse	711
379	VINCE, MARGARET A. & CHENG, R. The Retardation of Hatching in Japanese Quail	210
73	WALCOTT, C. <i>see</i> MISELIS, R.	
	WALTER, D. <i>see</i> BUTLER, C. G.	
633	WALTER, R. O. & HAMILTON, J. B. Head-Up Movements as an Indicator of Sexual Unreceptivity in Female Medaka, <i>Oryzias latipes</i>	125
138	WALTER, R. O. & HAMILTON, J. B. Supermales (YY Sex Chromosomes) and Androgen-Treated XY Males: Competition for Mating with Female Killifish, <i>Oryzias latipes</i>	128
427	WEBER, P. G. Visual Aspects of Egg Care Behaviour in <i>Cichlasoma nigrofasciatum</i> (Günther)	688
700	WEINTRAUB, J. D. Homing in the Lizard <i>Sceloporus orcutti</i>	132
55	WESTLAKE, G. F. <i>see</i> KLEEREKOPER, H.	
760	WILLEY, RUTH <i>see</i> WILEY, R. B.	
290	WILLEY, R. B. & WILLEY, RUTH. The Behaviour Ecology of Desert Grasshoppers. I. Presumed Sex Role Reversal in Flight Displays of <i>Trimetropterus agrestis</i>	473
758	WILLIAMS, J. M. <i>see</i> WILLIAMS, T. C.	
461	WILLIAMS, T. C. & WILLIAMS, J. M. Radio Tracking of Homing and Feeding Flights of a Neotropical Bat, <i>Phyllostomus hastatus</i>	302
276	WILSON, A. P. & BOELKINS, R. C. Evidence for Seasonal Variation in Aggressive Behaviour by <i>Macaca mulatta</i>	719
	WILSON, E. O. <i>see</i> HANGARTNER, W.	
284	WILZ, K. J. Causal and Functional Analysis of Dorsal Pricking and Nest Activity in the Courtship of the Three-Spined Stickleback, <i>Gasterosteus aculeatus</i>	115
151	WILZ, K. J. The Disinhibition Interpretation of the 'Displacement' Activities During Courtship in the Three-Spined Stickleback, <i>Gasterosteus aculeatus</i>	682
159	WOLFE, J. L. Experiments on Nest-Building Behaviour in <i>Peromyscus</i> (Rodentia: Cricetinae)	613
165	WOOD-GUSH, D. G. M. & GILBERT, A. B. The Nesting Behaviour of Hens with Ovarian Transplants	52
	WOOD-GUSH, D. G. M. <i>see</i> DUNCAN, I. J. H.	
445	WOOTTON, R. J. Aggression in the Early Phases of the Reproductive Cycle of the Male Three-Spined Stickleback (<i>Gasterosteus aculeatus</i>)	740
	ZARROW, M. X. <i>see</i> ROSENBERG, K. M.	
575	ZUMPE, D. & MICHAEL, R. P. Redirected Aggression and Gonadal Hormones in Captive Rhesus Monkeys (<i>Macaca mulatta</i>)	11
103	ZUMPE, D. & MICHAEL, R. P. Ovarian Hormones and Female Sexual Invitations in Captive Rhesus Monkeys (<i>Macaca mulatta</i>)	293
454	ZUMPE, D. <i>see</i> MICHAEL, R. P.	
	Societies	
60	ANIMAL BEHAVIOR SOCIETY	397, 600
625	ASSOCIATION FOR THE STUDY OF ANIMAL BEHAVIOUR	190, 396, 797
	Book Reviews	
26	CAIANIELLO, E. R. (Ed.) Neural Networks	605
	CORNWELL, P. B. The Cockroach. Vol. I. A Laboratory Insect and an Industrial Pest	192
	FOSS, B. M. (Ed.) The Determinants of Infant Behaviour	799

GILBERT, R. M. & SUTHERLAND, N. S. (Eds) Animal Discrimination Learning	40
GREENWALT, C. H. Bird Song: Acoustics and Physiology	40
KIMBLE, D. P. (Ed.) Experience and Capacity: Proceedings of the Fourth Conference on Learning, Remembering and Forgetting	15
LENTZ, T. L. Primitive Nervous Systems	90
LEVINE, L. Biology of the Gene	19
PICKFORD, MARY. The Central Role of Hormones	79
WALKER, E. P. Mammals of the World	192
WEISKRANTZ, L. (Ed.) Analysis of Behavioral Change	192
Books Received	801
Editorial	40

© This journal is copyright. Applications to reproduce any part of its contents should be addressed to the publishers, Baillière, Tindall & Cassell Ltd, 7 & 8 Henrietta Street, London WC1

Printed by Wellington Printers, Wellington, Som.

40
40
19
60
19
70
19
19
60
40

Dupl.

VOLUME